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**PRA 4: Wastewater Treatment System  
Completion Report**

**Bridgeport Harbor Station  
Bridgeport, Connecticut**

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## **1. INTRODUCTION**

This Completion Report documents the activities performed to achieve compliance with State of Connecticut Department of Environmental Protection (CTDEP) Remediation Standard Regulations (RSR) for Potential Release Area (PRA) 4 at the Bridgeport Harbor Station (BHS) located at 1 Atlantic Street in Bridgeport, Connecticut (Site). The location of the Site is shown on Figure 1. Weston Solutions, Inc. (WESTON®) prepared this summary under contract to PSEG Power Connecticut LLC (PSEG) using data and information generated by WESTON and others.

PSEG acquired the membership interest in Wisvest-Connecticut, LLC (Wisvest), the owner of BHS, on 6 December 2002 and changed the name to PSEG. Wisvest had previously acquired the Site in April 1999 from The United Illuminating Company (UI). Because the Site qualified as an “Establishment,” under Connecticut’s Property Transfer Act (Connecticut General Statutes Section §22a-134 et seq., as amended), transfer of ownership required submittal of a Form III to the CTDEP. The most recent Form III, submitted to the CTDEP in December 2002, identified PSEG as the “certifying party.” On 9 January 2003, the CTDEP notified PSEG that it had determined that oversight of remedial activities at the Site in accordance with the RSRs would continue to be delegated to a Licensed Environmental Professional.

Environmental investigations were initiated at BHS in 1998 by UI and continued by Wisvest and then PSEG following the various transfers. These investigations focused on 17 PRAs identified as part of the original Phase 1 Environmental Assessment, prepared in November 2000.

In summary, PRAs 1, 2, 3, 5, 6, 8, 12, 13, 14, 15, and 88 were identified as potentially requiring some form of remediation. Based on the investigation results, it was concluded that no remediation was required at PRAs 4, 9, 10, and 11. Former PRA 7 is no longer part of the Site because it was located on land that was subsequently conveyed to the Bridgeport Port Authority. The Bridgeport Port Authority filed a separate Form III in connection with the transfer of PRA 7 and is now responsible for the investigation and

closure of that area in accordance with the RSRs. PRA 16 is located completely within the boundaries of PRAs 13 and 15 and was assessed as part of the PRA 13 and 15 investigations. Figure 2 shows the locations of all 17 PRAs.

Further investigation and/or remediation were performed at PRAs 1, 2, 12, and 13 and they were determined to be in compliance with the RSRs. WESTON developed and submitted individual Completion Reports for each of those four PRAs to PSEG in August 2005.

This report documents the rationale used to determine compliance with the RSRs for PRA 4, where no additional investigation and/or remediation were required. The following sections include a brief description and history of the PRA, summary of relevant analytical data and comparison with the RSRs, and discussion of the rationale for determining compliance.

The individual Completion Reports for the various PRAs will be incorporated into a final Remediation Report that will be submitted to CTDEP.

## **2. SITE DESCRIPTION/BACKGROUND**

PRA 4 is the current operating wastewater treatment system for the BHS and is located along the Pequonnock River on the eastern boundary of the facility (see Figure 2). The wastewater treatment system consists of a treatment plant (housing pumps, tanks, process equipment, chemicals, sampling equipment, etc.), four settling/treatment basins, one lined lagoon and associated piping. The wastewater treatment system was constructed circa 1957 on a portion of land that is outside the historic shoreline at the Harbor and was created by infilling. Adjacent to the current wastewater treatment system was an impoundment that first appeared on a 1975 aerial photograph, but was removed and/or backfilled prior to 1985. No historical information was available regarding the use of the impoundment or the nature of the backfill. The former impoundment is considered separately as PRA 14. Figure 3 shows the boundary of PRA 4.

### **3. POTENTIAL SOURCES**

Potential releases from the system include spills or accidental releases from the process areas or unintentional bypass of the treatment processes and discharge to the basins/lagoons. Such releases could contain volatile organic compounds (VOC), semi-volatile organic compounds (SVOC), total petroleum hydrocarbons (TPH), toxic analyte list (TAL) metals, or polychlorinated biphenyls (PCB) because these compounds were present at the BHS over the history of its operation.

### **4. SUMMARY OF PRA 4 INVESTIGATIONS**

A Phase II/III Field Investigation was performed in 1998 to assess environmental conditions and to identify constituents of concern at PRA 4. A total of eight soil borings were drilled at the locations shown on Figure 3. The soil borings identified fill material to a depth of 8 feet (ft) below grade that was comprised of sand, silt and some coal chips, brick fragments, and cinders.

A total of nine soil samples were collected from the borings. Four samples were collected within the upper 4 ft of soil and five samples were collected from soils deeper than 4 ft below grade. All nine soil samples were analyzed for VOCs, SVOCs, TPH, and TAL metals. Six of the nine soil samples were also analyzed for PCBs. The list of analytes for the soils samples was conservatively determined based on the types of compounds likely to have been treated or used by the wastewater treatment system (refer to the previous section).

### **5. SCREENING ASSESSMENT AND COMPLIANCE SUMMARY**

Analytical results from each sample collected from PRA 4 were compared to applicable criteria provided in the RSRs as well as related screening values (i.e., metals concentrations versus 20 times the GB Pollutant Mobility Criteria). The attached table presents a summary of the sampling results. Groundwater beneath the Site is classified as “GB” because of the industrial nature of the area and the proximity to saline waters of the Pequonnock River and Bridgeport Harbor.

## **Soil**

As shown in the attached table, soil samples from TB-021, TB-047, TB-062, TB-063, TB-064, MW-025, and MW-027 contained concentrations of various metals (including lead, chromium, cadmium, and nickel) exceeding 20 times the GB Pollutant Mobility Criteria. However, these samples were also analyzed using the Toxic Characteristic Leaching Procedure (TCLP). In each case, the TCLP results were less than the Groundwater Protection Criteria (GWPC). One TCLP result for lead (TB-021) did exceed the GWPC but was less than 10 times the GWPC, which is acceptable for Class GB groundwater.

Two soil samples contained concentrations of total chromium that exceeded both the residential and industrial direct exposure criteria. Because the direct exposure criterion for chromium is conservatively based on hexavalent chromium, the samples were subsequently analyzed for this compound. The concentration of hexavalent chromium in each sample was less than the residential direct exposure criteria. This evaluation shows that all of the soil samples collected from PRA 4 are in compliance with the RSRs.

## **Groundwater**

Compliance with the RSRs for groundwater will be demonstrated on a site-wide basis rather than individual PRAs by evaluating groundwater quality nearest the point of groundwater discharge to Bridgeport Harbor and Long Island Sound. However, as a relative indication of conditions within PRA 4, historical groundwater quality data were evaluated. Various metals (including arsenic, vanadium, and zinc), VOCs, and SVOCs have been intermittently detected in samples collected from wells MW-018, MW-026, MW-026D, and MW-027 since 1998. Only arsenic and zinc have been found at concentrations exceeding the Surface Water Protection Criteria (SWPC) in those wells. Proposed site-specific Alternate SWPC values were developed and submitted to CTDEP for approval in a letter dated 23 March 2005. Concentrations of arsenic and zinc have not exceeded their respective site-specific Alternative SWPC and compliance with RSR groundwater standards has been achieved in PRA 4.

## **6. PROPOSED FURTHER ACTION**

No further actions are recommended by WESTON for PRA 4 given that no compounds were detected in soils at concentrations exceeding the direct exposure criteria or the GWPC, confirming that soils are in compliance with the RSRs. An Environmental Land Use Restriction is not required for soil within this PRA. Groundwater in this portion of the Site will continue to be monitored as part of a site-wide groundwater monitoring program.

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## FIGURES

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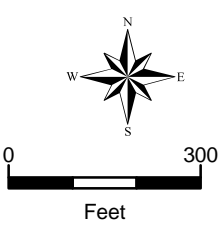
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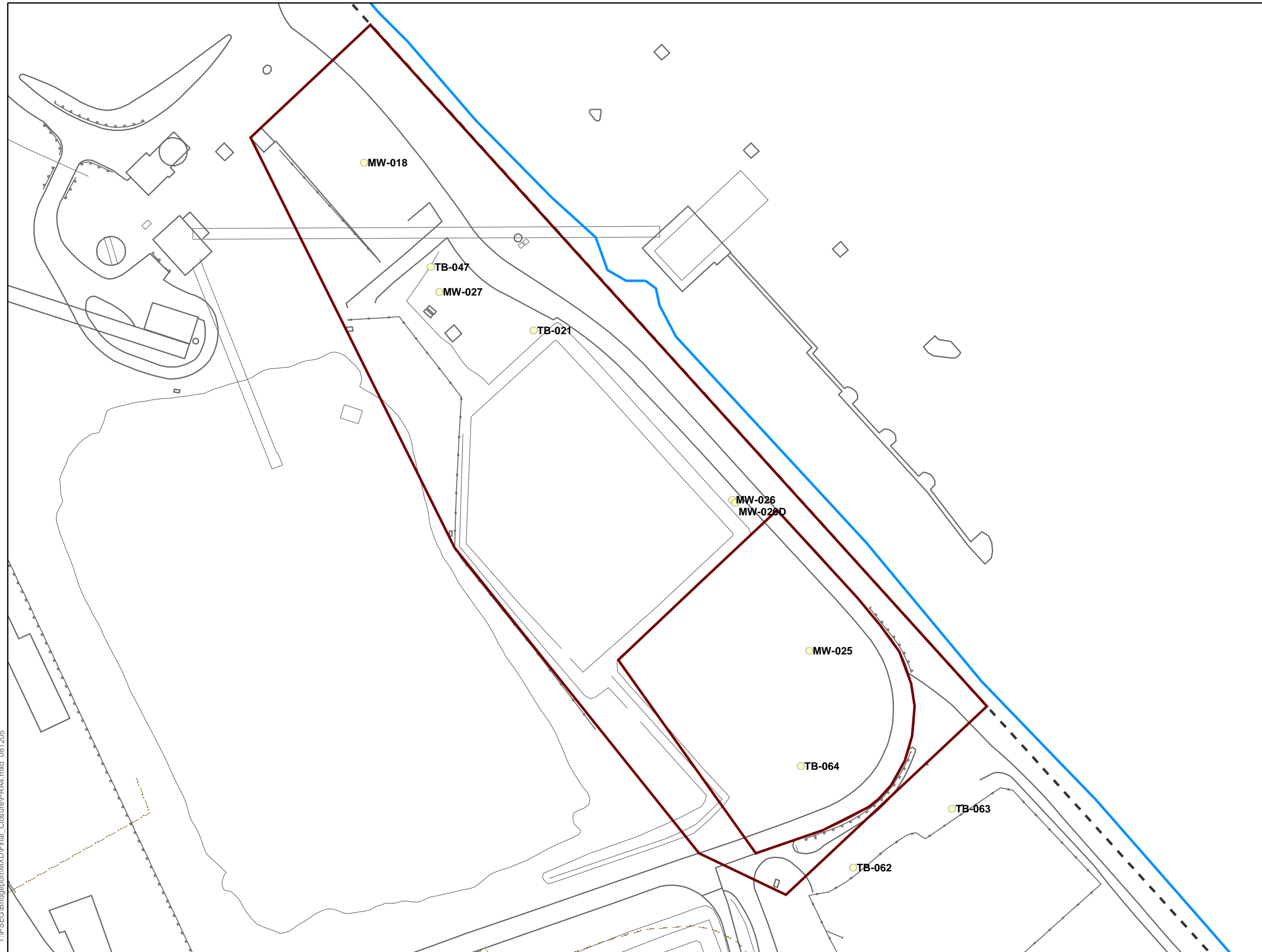
- |                   |            |        |        |
|-------------------|------------|--------|--------|
| Property Boundary | <b>PRA</b> | PRA 14 | PRA 5  |
| Sample Location   | PRA 1      | PRA 15 | PRA 6  |
| Waters Edge       | PRA 10     | PRA 16 | PRA 7  |
|                   | PRA 11     | PRA 2  | PRA 8  |
|                   | PRA 12     | PRA 3  | PRA 88 |
|                   | PRA 13     | PRA 4  | PRA 9  |



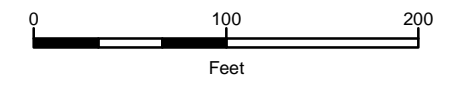
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**Figure 2**  
**PRA Location Map**

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- - Property Boundary
- Waters Edge
- SampleLocs
- - - Historic Features
- ▭ PRA 4



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**Figure 3**  
**PRA 4**  
**Sampling Locations**

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## TABLE

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# Regulatory Exceedance Summary

PSEG Power CT LLC (Bridgeport Harbor Station)

## PRA 4 Wastewater Treatment Facility

0 - 4 feet

	Extract	NAPL	10XGWPC	GWPC	20XGBPMC	2XGBPMC	GBPMC	2XIDEC	IDEC	RDEC	IVC	Result
<b>MW-026D</b>												
Lead	X				4.9 mk (2-4)							4.9000000954
<b>TB-021</b>												
Cadmium	X				1.9 mk (0-2)							1.8999999762
Chromium	X				203 mk (0-2)				203 mk (0-2)	203 mk (0-2)		203
Lead	X			0.016 ml (0-2)								0.0160000008
Lead	X				233 mk (0-2)							233
Mercury	X	0.27 mk (0-2)										0.2700000107
Nickel	X				84.4 mk (0-2)							84.400001526
<b>TB-047</b>												
Chromium	X				3790 mk (2-4)				3790 mk (2-4)	3790 mk (2-4)		3790
Lead	X				16.4 mk (2-4)							16.399999619
Mercury	X	0.03 mk (2-4)										0.0299999993
Nickel	X				514 mk (2-4)							514
<b>TB-062</b>												
Chromium	X				42 mk (2-4)							42
Copper	X											0.0099999998
Lead	X				40 mk (2-4)							40
Mercury	X	0.12 mk (2-4)										0.1199999973
Nickel	X				113 mk (2-4)							113

## PRA 4 Wastewater Treatment Facility

> 4 feet

	Extract	NAPL	10XGWPC	GWPC	20XGBPMC	2XGBPMC	GBPMC	2XIDEC	IDEC	RDEC	IVC	Result
<b>MW-025</b>												
Chromium	X				20.3 mk (14-15)							20.299999237
Copper	X											0.0099999998
Lead	X				8.3 mk (14-15)							8.3000001907
<b>MW-027</b>												
Copper	X											0.0199999996
Lead	X				8.1 mk (12-14)							8.1000003815

# Regulatory Exceedance Summary

PSEG Power CT LLC (Bridgeport Harbor Station)

## PRA 4 Wastewater Treatment Facility

> 4 feet

	Extract	NAPL	10XGWPC	GWPC	20XGBPMC	2XGBPMC	GBPMC	2XIDEC	IDEC	RDEC	IVC	Result
<b>TB-063</b>												
Chromium	X				28.5 mk (12-14)							28.5
Lead	X				11.5 mk (12-14)							11.5
<b>TB-064</b>												
Chromium	X				18.3 mk (8-10)							18.299999237
Lead	X				12.7 mk (8-10)							12.699999809